

Claims 2, 4-6, 11-12 were indicated as being allowable if rewritten.

Response to Objection to the Drawings

Figures 3-4 were objected to due to the lack of a "Prior Art" legend.  
(07/31/02 Office Action, p. 2).

Accompanying this Amendment is a document entitled "REQUEST TO APPROVE DRAWING CHANGES" including a photocopy of Figures 3 and 4 with proposed changes indicated in red ink. Applicant has proposed adding the term "Prior Art" to each of Figures 3-4 as suggested by the Examiner.

Also accompanying this Amendment is a document entitled SUBMISSION OF FORMAL DRAWINGS including Figures 1-8 wherein Figures 3-4 incorporate the changes indicated above.

Applicant respectfully submits the objection to the drawings has been overcome.

Response to 35 U.S.C. § 103 rejections

Claims 1, 3, 7-10 were rejected as being unpatentable over applicant's "admitted prior art" and Brucoleri.

Applicant respectfully submits that none of the cited references teaches or discloses a collective plurality of transconductors including a first plurality of transconductors associated with the first differential node and a second plurality of transconductors associated with the second differential node, *wherein at least one transconductor of the collective plurality has an adjustable transconductance, wherein the total transconductance of each of the first and second pluralities is nominally*

*halved between any adjustable transconductors and the remaining transconductors of that plurality.*

With respect to the "admitted prior art", the Examiner is presumed to be referring to applicant's Figure 4. Figure 4, however, *does not teach or suggest a plurality of transconductances associated with each differential node.*

Bruccoleri includes a disclosure of a differential charge pump using switched controlled current generators. The charge pump includes a first pair of nonswitched identical current generators to constantly inject the same current I on two nodes of a lowpass filter. The same current I is pulled out of the same nodes of the low pass filter by at least two pairs of *identical, switchingly controlled current generators*, each pair functionally connected to one of the two nodes. *All four switching controlled current generators of the two pairs are the same type and have the identical circuit.* (Bruccoleri, col. 2, lines 46-62; Fig. 6).

Applicant respectfully submits that the Examiner *must consider* Bruccoleri *as a whole including portions that lead away from the claimed invention.* The Examiner appears to have "lifted" two current sources from Bruccoleri and inserted them into a prior art circuit without regard for the requirements imposed by Bruccoleri on the plurality of current sources connected to each differential node.

Applicant submits Bruccoleri *does not teach or suggest adjustable current sources or adjustable transconductors.* To the contrary, the current sources are identical switched constant current sources. Indeed the fact that the current sources are provided as matched identical pairs is *critical* to the teachings of Bruccoleri in order to achieve the results claimed by Bruccoleri. (Bruccoleri, col. 2, lines 51-67) Bruccoleri requires that the current sources within each pair are

matched to each other and that each pair is matched to the other pair such that all switched current sources are identical. Moreover, the switch control signals for each current source ensures that if a current source in one pair is switched on, an identical current source in the other pair is switched off.

Applicant respectfully submits that it is not clear what the motivation is or what advantages would be obtained by modifying applicant's Figure 4 to incorporate an additional current source for each differential node, particularly with the switch requirements imposed by Bruccoli.

Although the Examiner has suggested that the modification would impart benefits such as "ensuring high speed" and "enhancing the precision of the circuit", such benefits were achieved in Bruccoli due to the switching of identical current sources having identical circuit configurations for the purpose of regulating the output voltage of a charge pump.

The transconductances of Figure 4 are not switchingly coupled to the differential node pair. Each transconductance of Figure 4 is always coupled to the same associated differential node. Bruccoli teaches a switching scheme that ensures when a current source associated with one differential node is switched on, an identical current source associated with the other differential node is switched off.

Given that calibration of the circuit of Figure 4 is accomplished by adjusting the variable transconductance,  $g_B$ , and is thus limited to the precision of  $g_B$  rather than the number of additional current sources, *applicant fails to see how merely adding additional transconductances to each differential node achieves any of the benefits claimed by the Examiner.* Moreover, applicant submits Bruccoli's

switched current sources would appear to complicate calibration or render calibration impossible.

Although the Examiner has indicated combining references, applicant respectfully submits that 1) such combination is contrary to the teachings of Bruccoli; 2) such combination does not teach or suggest the claimed subject matter – in particular the relative sizes of the adjustable transconductors vs. the remaining transconductors as claimed; and 3) no motivation exists for such a combination.

Thus applicant respectfully submits that none of the cited references teaches or suggests, nor can said references be fairly combined to teach or suggest: a collective plurality of transconductors including a first plurality of transconductors associated with the first node and a second plurality of transconductors associated with the second node, *wherein at least one transistor of the collective plurality has an adjustable transconductance, wherein the total transconductance of each of the first and second pluralities is nominally halved between any adjustable transconductors and the remaining transconductors of that plurality.*

In contrast, claim 1 includes the language:

1. A common mode feedback circuit apparatus comprising:  
a first and a second node defining a differential node pair; and  
a collective plurality of transconductors including a first plurality of transconductors associated with the first node and a second plurality of transconductors associated with the second node, *wherein at least one transistor of the collective plurality has an adjustable transconductance, wherein the total transconductance of each of the first and second pluralities is nominally halved between any adjustable transconductors and the remaining transconductors of that plurality.*

(Claim 1)(emphasis added)